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Health-related Quality of Life in Adult Inpatients Affected by Anorexia Nervosa

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Keywords: anorexia nervosa; health-related quality of life; inpatient treatment; emergency hospitalization; EuroQoL health questionnaire

Abstract

Objective Poor awareness of illness in anorexia nervosa (AN) may render the assessment of health-related quality of life (HRQoL) difficult. We aimed at evaluating severe AN patients' HRQoL at discharge using different instruments and correlating this measure with clinical variables.

Methods We enrolled 71 adult AN inpatients admitted through the emergency department. At admission, all participants completed the following: Medical Outcome Short Form Health Survey, Eating Disorder Inventory-2 and Temperament and Character Inventory. At admission and discharge, body mass index, EuroQoL Health Questionnaire/Visual Analogue Scale and Clinical Global Impression were evaluated.

Results The HRQoL was severely impaired at baseline, but it improved at discharge. HRQoL correlated with eating psychopathology and personality, but not with body mass index or Clinical Global Impression.

Conclusion The HRQoL effectively captured patients' improvement at discharge. Given its correlations with clinical variables, this instrument may be useful in clinical practice. Copyright © 2014 John Wiley & Sons, Ltd and Eating Disorders Association.

Introduction

Anorexia nervosa (AN) is a severe psychiatric disorder with multifactorial pathogenesis often requiring complex interventions including outpatient, day patient and inpatient services (Klump, Bulik, Kaye, Treasure, & Tyson, 2009; NICE, 2004). It is a serious condition entailing long-term sequelae and a heavy burden on patients' physical and social functioning. Patients' motivation is frequently poor, and many of them seek treatment only when emaciated to the point of death (Abbate-Daga, Amianto, Delsedime, De-Bacco, & Fassino, 2013). Therefore, hospitalization for supportive medical care and weight restoration is necessary in this phase to minimize life-threatening medical risks; notwithstanding patients' clinical severity, psychosocial interventions are also recommended during inpatient treatment (NICE, 2004).

Over the past decades, the assessment of quality of life (QoL) has become increasingly relevant from not only a clinical but also a policy-maker standpoint. In fact, this parameter has been recently considered in the evaluation of cost-effectiveness analyses in the field of eating disorders (EDs; Stuhldreher et al., 2012) and in the assessment of new treatments as well, even more so with respect to those illnesses that tend to become chronic (i.e., AN; Wonderlich et al., 2012). QoL represents a broad multidimensional concept; the

medical literature often refers to a discrete component of it, namely health-related QoL (HRQoL), which is subjective, multifactorial and fluctuating in time and represents ‘the functional effect of an illness and its consequent therapy upon a patient, as perceived by the patient’ (Miller, 2002).

Literature has acknowledged not only that QoL in individuals affected by EDs is poor when compared with healthy controls and other psychiatric patients but also that addressing this aspect in treatment is needed (for reviews, see Jenkins, Hoste, Meyer, & Blissett, 2011; Sy, Ponton, De Marco, Pi, & Ishak, 2013). However, it is difficult to draw definitive conclusions on this topic because data are mixed, particularly as regards AN. In fact, a number of community studies reported better HRQoL in those affected by AN when compared with patients diagnosed with bulimia nervosa or bulimic variants (Doll, Petersen, & Stewart-Brown, 2005; Mond, Hay, Rodgers, Owen, & Beumont, 2005; Padierna, Quintana, Arostegui, Gonzalez, & Horcajo, 2000). A couple of points can be raised to explain such a mixed body of evidence. First, the ego-syntonic nature of AN psychopathology (Abbate-Daga et al., 2013) could hinder a correct assessment of HRQoL (Mond et al., 2005), thus biasing results. Second, the wide range of AN severity included in different studies should be taken into account in order to explain this variability as well. For example, HRQoL has been consistently found to be poor mostly in case of extreme dieting (Mitchison, Hay, Slewa-Younan, & Mond, 2012) and hospitalization (Ackard, Richter, Egan, Engel, & Cronemeyer, 2014); hence, these results may not be easily generalizable. Still, interesting findings are available on HRQoL improvements in severe and long-standing AN outpatients receiving psychotherapy (Touyz et al., 2013), but it remains unclear whether HRQoL levels can improve also in the inpatient setting.

Assessing HRQoL in AN is relevant indeed for those cases with malnutrition-related sequelae that can strongly impact patients' QoL not only during acute weight loss but also during the recovery process. Such impact can be particularly relevant for patients with low body mass index (BMI).

To date, consensus on the best way to comprehensively assess HRQoL in AN does not exist, and several tools have been used over the past years. It has been suggested that generic instruments could represent a fruitful adjunct to the use of disorder-specific measures that could more appropriately capture AN-specific factors such as partial awareness of illness and poor motivation to change (Ackard et al., 2014; Mond et al., 2005; Muñoz et al., 2009) because the former could allow comparison of results across diagnoses.

In biomedical research, HRQoL has been usually evaluated with tools such as the EuroQoL 5D (EQ-5D VAS; EuroQoL Group, 1990) or the Medical Outcome Short Form Health Survey (SF-36; Ware & Sherbourne, 1992) in different clinical settings ranging from surgery (Carradice et al., 2011) to psychiatry (Maratos, Trivedi, Richards, Seeley, & Laing, 2012). The assessment of HRQoL in the ED field has increased over the past years, and it has been conducted not only with the aforementioned generic instruments (Abbate-Daga et al., 2011; Catalan-Matamoros, Helvik-Skjaerven, Labajos-Manzanares, Martínez-de-Salazar-Arboleas, & Sánchez-Guerrero, 2011; Turner, Bryant-Waugh, & Peveler, 2010) but also with some disease-specific tools including the Eating Disorders Quality of Life instrument (Engel et al., 2006), the Health-related Quality of Life for Eating Disorders questionnaire (Las Hayas et al., 2006), the Eating Disorders Quality of Life Scale (Adair et al., 2007) and the Quality of Life for Eating Disorders measure (Abraham, Brown, Boyd, Luscombe, & Russell, 2006). On one hand, these instruments are useful to evaluate clinical outcomes, but on the other hand, their specificity tends to make their use difficult when scientific comparisons with other patients affected by somatic or mental disorders are needed (Ackard et al., 2014).

The overarching goal of this study was to investigate the relationship between HRQoL and hospitalization in a sample of severe (i.e., admitted through the emergency department) and long-standing AN inpatients. Our primary aim was to test whether HRQoL could significantly change after hospitalization in a sample of severe (i.e., malnourished, ambivalent and medically unstable) AN patients. As a secondary aim, we

evaluated also the correlations between HRQoL and psychopathology (eating psychopathology and personality) and some clinical variables as well [i.e., BMI and Clinical Global Impression (CGI) scores].

We hypothesized poor HRQoL scores upon admission, a significant improvement on this scale at discharge and a correlation between HRQoL and clinical severity (i.e., BMI and CGI).

Materials and methods

Participants

We consecutively recruited adult AN inpatients who were hospitalized at the ward for EDs of the San Giovanni Battista Hospital of the University of Turin, Italy, between 15 January 2009 and 15 December 2012. Inclusion criteria were as follows: (i) meeting DSM-IV-TR (American Psychiatry Association, 2000) criteria for AN, restricting or binge/purging subtype; (ii) hospital admission through emergency department for AN-related conditions; and (iii) female gender. Exclusion criteria were as follows: (i) alcohol or substance abuse as assessed with clinical interview at admission; (ii) pre-morbid medical or neurological illnesses (i.e. epilepsy and diabetes) with the exception of emaciation-related conditions; (iii) mental retardation (IQ < 85, as measured with the Wechsler Adult Intelligence Scale—Revised; Wechsler, 1997); (iv) need of intensive care unit. To minimize treatment-related confounders, all patients were evaluated within 3 days after admission.

Written informed consent was obtained by all participants after a complete description of study procedures as approved by the Ethical Committee of the Department of Neuroscience of the University of Turin.

Treatment during hospitalization

Given the emergency reason for the admission, the hospitalization had two specific aims: (i) to obtain medical stabilization and re-feeding until a sufficient oral intake of daily calories was achieved also in those cases requiring artificial nutrition upon admittance; and (ii) to provide psychosocial interventions aimed at motivating patients to the next phases of treatments (i.e., residential programmes, partial hospitalization or outpatient services).

Therefore, during hospitalization, patients were actively engaged in treatment aiming at providing them with an individualized treatment plan (NICE, 2004). As recommended, the team was multidisciplinary including psychiatrists, clinical psychologists, nurses, a registered dietitian and an internal medicine physician. Weight restoration was started as a first-step intervention (including parenteral and enteral re-feeding when strictly required by medical condition) in order to minimize the life-threatening risks due to severe malnutrition. Inpatients received five structured meals (breakfast, half-morning snack, lunch, mid-afternoon snack and dinner) under dietitian's constant supervision, and their weight was measured in the morning after voiding. Blood tests and ECG were frequently monitored per clinical evaluation. Psychiatric management focused on psychopharmacology (mainly selective serotonin reuptake inhibitors and/or atypical antipsychotics) and on the assessment of comorbidities. Moreover, patients were provided with daily individual motivational sessions, daily individual psychotherapy and weekly psycho-educational groups in order to foster the therapeutic alliance and mobilize as much as possible inpatients' resources to bring about their own clinical improvement. Finally, parental support was offered to help parents and significant others to take part in patient's therapeutic changes.

Measures

Assessments performed at baseline (T0)

Medical Outcome Short Form Health Survey

The SF-36 (Ware & Sherbourne, 1992) is a well-validated 36-item questionnaire developed to provide a comprehensive measure of physical, emotional and social well-being. It was designed to capture two main dimensions—physical and mental—showing good psychometrics on both community and affected individuals (McHorney, Ware, & Raczek, 1993). The instrument provides scores in eight multi-item dimensions: physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role and mental health. These eight scaled scores are the weighted sums of the questions in their section. Each scale is directly transformed into a 0 (worst)–100 (best) scale on the assumption that each question carries equal weight. The higher the score, the better HRQoL (i.e., a score of zero is equivalent to poorest HRQoL).

The Eating Disorder Inventory-2

The Eating Disorder Inventory-2 (EDI-2) (Garner, 1991) is a self-report inventory that measures disordered eating attitudes, behaviours and personality traits common to individuals diagnosed with an ED.

The EDI-2 includes 91 self-rated items grouped into 11 subscales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, asceticism, impulse regulation and social insecurity. Each item can be rated on a 6-point response scale: A, always true about me; U, usually true; O, often true; S, sometimes true; R, rarely true; and N, never true about me. The higher the score, the more elevated eating psychopathology with published norms for different countries. Drive for thinness (seven items), bulimia (seven items) and body dissatisfaction (nine items) represent the 'symptom index'. The EDI-2 was found to have a high level of internal consistency, indicated by Cronbach's alpha values between 0.82 and 0.93 (Thiel & Paul, 2006).

The Temperament and Character Inventory

The Temperament and Character Inventory (TCI) (Cloninger, Svrakic, & Przybeck, 1993) is a 240-item self-administered questionnaire divided into seven dimensions. Four of these dimensions assess temperament: novelty seeking expresses the level of exploratory activity, harm avoidance (HA) reflects the efficiency of the behavioural inhibition system, reward dependence reflects the maintenance of rewarded behaviour and persistence expresses maintenance of behaviour as an indicator of frustration tolerance. The other three dimensions assess character: self-directedness expresses self-concepts about autonomy and integrity, cooperativeness deals with self-concepts about others and the ability to cooperate, and self-transcendence expresses the relationship between the self and the external world as a whole. The TCI showed good properties as regards both internal consistency and test–retest reliability (Fossati et al., 2007).

Assessments performed at admission (T0) and discharge (T1)

At both time points, patients' BMI was measured by a nurse using a calibrated scale, and all participants were asked to complete the following.

EuroQoL Health questionnaire/Visual Analogue Scale

The EQ-5D VAS (EuroQoL Group, 1990) is a self-report standardized measure developed by the EuroQoL group in order to measure general HRQoL for clinical and economic appraisal. It consists of five items: EQ-5D 1, mobility; EQ-5D 2, self-care; EQ-5D 3, usual activities; EQ-5D 4, pain/discomfort; and EQ-5D 5, anxiety/depression. Each dimension has three levels: no problems, some problems and extreme problems. The respondent is asked to indicate his or her health state by ticking (or placing a cross in) the box against the most appropriate statement in each of the five dimensions.

A global index (EQ-5D index score) can be derived from the five dimensions. The scores of this index range from -0.59 (worst HRQoL) to 1 (best HRQoL); negative values indicate an HRQoL as 'worse than death' (Macran & Kind, 2001). This instrument also captures a self-rating of health status on a 20-cm vertical VAS, ranging from 100 (best imaginable health state) at the top to 0 (worst imaginable health state) at the bottom. This information can be used as a quantitative measure of health outcome as judged by the individual respondents.

Although, currently, no Italian population-based scoring system is available for the EQ-5D index, we used the UK one because it has been already found to be comparable with that of other cultures (Nan, Johnson, Shaw, & Coons, 2007).

Clinical Global Impression

The CGI (Guy, 1976) is a three-item observer-rated scale commonly used to measure the course of illness and treatment response in mental disorders. It measures illness severity (CGI-S), global improvement or change (CGI-C) and therapeutic response, but the first two scales are more frequently used than the therapeutic response section in both clinical and research settings. It is an easy-to-administer tool that has been shown to be a robust measure of efficacy in several clinical drug trials.

The CGI-S is a 7-point scale that requires the clinician to assess the severity of the patient's illness at the time of assessment, on the basis of clinician's past clinical experience. It is rated on a 7-point scale, with the severity of illness scale using a range of responses from 1 (normal) through to 7 (amongst the most severely ill patients).

The CGI-C is a 7-point scale that requires the clinician to assess how much the patient's illness has improved or worsened when compared with a baseline state at the beginning of the intervention. CGI-C scores range from 1 (very much improved) to 7 (very much worse).

Statistical analysis

The SPSS statistical software package (SPSS Inc., Chicago, IL, USA) was used for data analysis. The EQ-5D dimensions were analysed as categorical variables, collapsing the responses to a two-level variable (no problems versus some/extreme problems). Differences in proportions of patients with no problems versus some/extreme problems between T0 and T1 were analysed using the McNemar test. In order to verify the modification of HRQoL for those patients reporting severe problems, as a second-step analysis, we created another two-level variable (i.e., no problems/some problems versus severe problems) further analysed with the McNemar test.

The EQ-5D index and VAS scores and BMI measured before and after treatment were compared by means of a t-test for paired samples.

Cohen's d effect sizes were calculated for EQ-5D index and VAS comparisons. Differences are defined as negligible (≥ -0.15 and < 0.15), small (≥ 0.15 and < 0.40), medium (≥ 0.40 and < 0.75), large (≥ 0.75 and < 1.10), very large (≥ 1.10 and < 1.45) and huge (> 1.45).

Linear regression was performed to verify the association between baseline HRQoL and HRQoL improvement.

Linear correlations amongst EQ-5D index and VAS and both psychometric tests and clinical variables have been performed with Pearson's bivariate correlation to examine whether improvements are directly related.

The limit for statistical significance was set at $p = 0.05$.

Corrective measures for the post hoc test (i.e., the Bonferroni correction) were not used for two reasons: (i) cogent arguments against the practice for exploratory studies have been suggested by the epidemiologist (Rothman, 1986); and (ii) data dredging was avoided by conducting only a pre-planned analysis (Grove & Andreasen, 1982).

Results

Clinical features of the sample

Eighty-two patients were eligible for participation, but 11 patients failed to meet inclusion criteria for this study ($N = 3$ individuals with alcohol/substance abuse, $N = 6$ male patients, $N = 1$ with diabetes and $N = 1$ affected by Crohn's disease); therefore, $N = 71$ inpatients were finally enrolled. All inpatients were on medications per clinical judgement. The mean age (presented as mean age \pm standard deviation) of the sample was 26.46 ± 8.9 years (range: 16–45 years), mean age at onset was 18.70 ± 6.21 years (range: 11–34 years) and mean duration of illness was 8.02 ± 7.73 years (range: 1–29 years). Mean BMI was 14.71 ± 2.26 at admission (range: 10.3–17.3) and 15.21 ± 1.79 at discharge (range: 12.3–19.14). Mean duration of hospitalization was 26.38 ± 13.23 days (range: 9–64 days); all participants were Caucasian.

The majority of patients failed previous treatments ($N = 57$) and had a comorbid Axis I disorder ($N = 50$) as assessed per clinical interview at admission.

Changes in health-related quality of life between admission and discharge

Significant changes with regard to mobility, pain/discomfort and anxiety/depression have been found between T0 and T1 (Table 1). When considering specifically those patients with severe problems at the two time points, also the usual activities scale had significant results in addition to mobility, pain/discomfort and anxiety/depression scales (Table 1).

HRQoL was overall impaired at baseline, whereas it improved at discharge on the EQ-5D index (T0: 0.51 ± 0.29 ; T1: 0.70 ± 0.22 , $t = -6.08$; $p < 0.001$) and VAS (T0: 44.86 ± 23.78 ; T1: 62.08 ± 19.97 , $t = -25.2$; $p = 0.01$) with medium ($d = 0.74$) and large ($d = 0.79$) effect size, respectively.

Using linear regression, those patients with lower HRQoL upon admission were found to show the largest improvement on the Δ EQ-5D index (i.e., EQ-5D index at discharge–EQ-5D index at admittance) at T1 ($F = 55.8$; $df = 1, 70$; $p < 0.001$; $R^2 = 0.47$).

Table 1. Proportions of patients affected by anorexia nervosa (AN, N = 71) with either some/extreme problems or extreme problems on the EQ-5D VAS at admission (T0) and discharge (T1)

	T0, N (%)	T1, N (%)	McNemar <i>p</i>
Some/extreme problems			
Mobility	51 (71.8)	34 (47.9)	0.002
Self-care	23 (32.4)	16 (22.5)	0.143
Usual activities	56 (78.9)	50 (70.4)	0.238
Pain/discomfort	58 (81.7)	47 (66.2)	0.035
Anxiety/depression	62 (87.3)	50 (70.4)	0.004
Extreme problems			
Mobility	22 (31)	1 (1.4)	<0.001
Self-care	5 (7)	0 (0)	0.063
Usual activities	10 (14.1)	0 (0)	0.002
Pain/discomfort	21 (29.6)	3 (4.2)	<0.001
Anxiety/depression	27 (38)	10 (14.1)	0.001

Significant *p*-values are highlighted in bold.

Correlations between baseline EQ-5D VAS and clinical variables

We did not find any significant correlations between BMI nor duration of hospitalization and EQ-5D index and VAS either at T0 or T1 (Table 2). No correlations were found between Δ EQ-5D VAS (i.e., EQ-5D VAS at discharge–EQ-5D VAS at admittance) and Δ BMI (i.e., BMI at discharge–BMI at admittance; $r = -0.05$, $p = 0.68$). CGI-S showed no correlations with EQ-5D index (T0: $r = -0.03$, $p = 0.81$; T1: $r = -0.22$, $p = 0.11$) and VAS (T0: $r = -0.1$, $p = 0.47$; T1: $r = -0.1$, $p = 0.45$) at either admission or discharge. Similarly, CGI-C demonstrated no correlations with the EQ-5D index (T0: $r = -0.02$, $p = 0.84$; T1: $r = -0.17$, $p = 0.11$) and VAS (T0: $r = -0.07$, $p = 0.63$; T1: $r = -0.1$, $p = 0.47$) at both time points.

Table 2. Correlations between baseline EQ-5D index and clinical variables

	EQ-5D index		EQ-5D VAS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
T0				
BMI at admission	−0.200	0.11	0.14	0.28
Duration of illness	0.100	0.55	−0.08	0.60
Length of hospitalization	0.164	0.34	0.06	0.73
T1				
BMI at admission	−0.010	0.91	−0.16	0.20
Duration of illness	0.220	0.16	−0.10	0.55
Length of hospitalization	−0.090	0.60	0.01	0.94

BMI, body mass index; VAS, visual analogue scale.

Correlations between baseline EQ-5D VAS, eating psychopathology and personality

Some correlations between EQ-5D index and EDI-2 resulted to be significant. EQ-5D index at admission correlated significantly with those subscales measuring eating behaviors and weight/body shape (body dissatisfaction, $r = -0.288$, $p < 0.05$) and those assessing ED-specific psychic features (interoceptive

awareness $r = -0.329$, $p < 0.05$; ineffectiveness $r = -0.313$, $p < 0.05$; impulsivity $r = -0.401$, $p < 0.05$; social insecurity $r = -0.327$, $p < 0.05$).

As regards personality, EQ-5D index at admission resulted to be positively correlated with both HA and self-directedness on the TCI.

No correlations were found between VAS and eating psychopathology and personality.

Discussion

With this study we aimed at evaluating HRQoL and its correlates with hospitalization on a sample of AN individuals who were poorly motivated and severely ill to the point of requiring an emergency hospitalization; that is, patients commonly found in clinical practice but still understudied in research. Our sample was composed of long-standing although young adult patients. As an additional challenge to what is thought to be an optimal option for AN management (Fairburn & Cooper, 2011), the admission through emergency department made it difficult to properly involve them in treatment plans in spite of their reluctance to seek treatment.

As expected, HRQoL at admission was poor (EQ-5D index score = 0.51; SF-36 total score = 4.11); such a result is similar to the score reported by patients affected by coronary disease (Goldsmith, Dyer, Buxton, & Sharples, 2010) but lower than that shown by psychotic and bipolar individuals (Hayhurst, Palmer, Abbott, Johnson, & Scott, 2006; McCrone et al., 2009). Our finding is in line with the position paper of the academy of EDs highlighting the seriousness of AN and the call for a wide level of healthcare coverage for such severe mental illness (Klump et al., 2009).

The EQ-5D VAS is a tool largely employed in clinical medicine and psychiatric disorders as well. Because severe medical alterations frequently plague those affected by AN, it could be worthwhile to use this standardized instrument to measure HRQoL. In fact, our data show that AN inpatients admitted through emergency department report HRQoL scores that are comparable with or even more severe than other debilitating medical or psychiatric illnesses. Although disease-specific instruments provide a valuable contribution to the understanding of this disorder (Ackard et al., 2014), using a generic tool is of keen interest because it makes it possible to compare HRQoL across an array of psychiatric along with medical disorders.

Nevertheless, a relatively brief (mean: 26 days) hospitalization focused on both medical stabilization and psychosocial interventions resulted to be effective in improving HRQoL; confirming our a priori hypothesis, both EQ-5D index and VAS scores increased significantly at discharge when compared with baseline. In more detail, the analysis of the EQ-5D VAS subscales showed that both physical (mobility and pain/distress) and psychological (anxiety/depression) dimensions improved. Therefore, these data seem to indicate that emergency hospitalizations in AN can play a role in improving HRQoL over the short run, differently from other interventions whose efficacy in this regard has been questioned (Sy et al., 2013).

The significant HRQoL improvement as measured by both EQ-5D index and VAS score is of clinical relevance when taking a closer look at each item of this instrument. In fact, patients improved on mobility, pain/discomfort and anxiety/depression scales. Moreover, the great majority of patients reporting extreme problems no longer perceived severe impairments upon discharge with the exception of the depression/anxiety scale. From a clinical standpoint, hospitalization resulted to be helpful indeed in improving both somatic and motor difficulties and in motivating discouraged and psychologically distressed

patients. This is in line with our results indicating that the poorer the HRQoL at admission, the better the improvement at discharge. This could be partially explained by the individual response to the multiple therapeutic components of hospitalization. Re-feeding has overall positive biological effects per se (Marzola, Nasser, Hashim, Shih, & Kaye, 2013), and medications have a role in improving anxiety and depression, although to a lesser extent than other psychiatric disorders (Mischoulon et al., 2011). Finally, daily psychotherapy in the context of re-feeding could have enhanced motivation and fostered the therapeutic alliance (Abbate-Daga et al., 2013).

In keeping with clinical guidelines (NICE, 2004), it should be considered that the aforementioned HRQoL changes should represent only a first-step goal in treatment because individualized psychological treatment plans are recommended upon discharge. In fact, when not carefully grounded on a wider treatment approach, hospitalizations can be clinically and cost-ineffective (Vandereycken, 2003) potentially increasing the risk of chronic course (Wonderlich et al., 2012) and resistance (Abbate-Daga et al., 2013).

Notwithstanding the improvement at discharge, these findings highlight also the persistence of such a severe clinical condition: in fact, our sample reported an EQ-5D index of 0.70 and a VAS score of 60.62 at discharge. These findings are of interest when compared with other populations: EQ-5D index score at discharge was 0.62 in Parkinson's disease (Schrage, Selai, Jahanshahi, & Quinn, 2000), 0.68 in schizophrenia (McCrone et al., 2009) and 0.85—coupled with a VAS of 67.8—in bipolar disorder (Hayhurst et al., 2006). Therefore, long-standing and severe patients may require a longer period of time before achieving good HRQoL, further advocating the need of early therapeutic interventions (Keski-Rahkonen et al., 2007; Sly & Bamford, 2011) possibly able to minimize dropouts (Fassino, Pierò, Tomba, & Abbate-Daga, 2009). From a public health standpoint, it would be also recommended to encourage the dissemination of AN-specific programmes to improve cost-effectiveness (Stuhldreher et al., 2012).

As a secondary aim, we evaluated the correlations between HRQoL and clinical, psychopathology and personality variables.

Different than expected, we did not find any correlations between HRQoL and CGI nor BMI. Although clinical and HRQoL improvements are not strictly related per se, the lack of correlation between CGI and EQ-5D index and VAS score could be somehow due to the inclusion criteria we used; in fact, we specifically enrolled severe, scarcely motivated and acutely ill patients. In contrast with other psychiatric disorders (i.e., depression) showing strong correlations between CGI and EQ-5D VAS scores (Günther, Roick, Angermeyer, & König, 2008), in AN, a clinical improvement (i.e., BMI) can lead to a short-term worsening of eating and weight concerns. Moreover, the lack of correlation may be due to the different standpoints captured by these instruments: the CGI is clinician rated, whereas the EQ-5D VAS is a self-report measure. Relatedly, it should be borne in mind that AN is an ego-syntonic disorder with affected individuals largely experiencing a strong ambivalence towards recovery (Abbate-Daga et al., 2013; Geller, Brown, & Srikanth, 2011; Serpell, Teasdale, Troop, & Treasure, 2004), leading to a somehow 'biased' subjective evaluation of disorder-related parameters. Further studies may want to explore these findings, also given their potential relevance in clinical practice.

As regards the lack of correlation between EQ-5D VAS and BMI, the hypothesis that this instrument may be more accurate with bigger changes in BMI could be raised. Furthermore, the correlation between low weight and HRQoL might be not linear; in other words, a certain BMI could entail different degrees of HRQoL impairment.

Finally, we found significant correlations between HRQoL and both eating psychopathology (EDI-2) and personality (TCI). It is noteworthy that severity of eating psychopathology correlated with poorer HRQoL as measured by the EQ-5D index on those scales referring to body dissatisfaction and other psychic factors. However, this did not hold true when patients provided a general assessment using the VAS. This discrepancy confirms not only the complexity of the assessment of HRQoL in EDs but also AN patients' poor awareness of their impaired QoL (Ackard et al., 2014; Mond et al., 2005) in spite of their recognition of somatic and psychic impairments.

With respect to personality, it is of interest that poor EQ-5D index correlated with scarce coping skills (low self-directedness) and high inhibition traits (high HA). Future studies are needed to clarify the role of personality in improving HRQoL. Still, depression might play a role also as regards HRQoL because it correlates with personality dimensions (Daga et al., 2011).

Given the ego-syntonic nature of the illness (Serpell et al., 2004; Tirico, Stefano, & Blay, 2010; Vitousek, Watson, & Wilson, 1998), a limitation of this study is represented by AN patients' ambivalence towards their symptoms; this element makes the assessment of improvement particularly difficult. Moreover, to date, there is no consensus on how to specifically measure HRQoL in the ED field (Abbate-Daga et al., 2011). Still, we did not collect SF-36 assessment at discharge and the considered sample could not be easily generalizable to less severe patients. Notwithstanding the aforementioned limitations, typical of the AN population, the EQ-5D VAS provided useful information—also given its correlations with psychopathology and personality—on HRQoL and its changes in AN.

In conclusion, these data highlight the entrenched relationship between somatic, disorder-specific and general psychopathology aspects in severe and acute AN. This is of interest from a clinical standpoint because these aspects require not only medical but also psychosocial interventions during hospitalization. Finally, these findings can also represent a starting point to generate new ideas on how to compare HRQoL across different diagnoses (Becker, Eddy, & Perloe, 2009).

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